

**PENNSYLVANIA STATE UNIVERSITY'S FACULTY DEVELOPMENT GRANT:  
EDUCATION AND RESEARCH RELATED TO THE NUCLEAR FUEL CYCLE**

**Executive Summary:**

Nuclear energy is a clean, safe, and reliable energy resource. One critical issue to resolve is determining an optimum nuclear fuel cycle. This proposal seeks start-up funds for a new junior faculty member in the Department of Mechanical and Nuclear Engineering (MNE) at the Pennsylvania State University who will advance the research and development of various fuel cycle concepts. This new hire will have a significant impact on Penn State's ability to contribute to the research and education of students in an area of crucial interest. Support from the United States Nuclear Regulatory Commission (NRC), matched in part by the institution, will provide a framework for integration of multi-disciplinary research, innovation, and teaching. Penn State provides an ideal environment for a junior faculty member to be successful given the unique research and outreach opportunities through facilities such as the Radiation Science and Engineering Center, which includes the Breazeale Nuclear Reactor. Moreover, the impact of the proposed faculty hire will be felt much beyond Penn State, through education that he/she will provide for industry and government employees using Penn State's well-established distance learning program in nuclear engineering.

The Nuclear Engineering Program, housed within the Department of Mechanical and Nuclear Engineering, has strong support throughout the institution, especially from the College of Engineering and from the Vice President of Research through Penn State's Institutes of Energy and the Environment (PSIEE). Moreover, there is statewide interest in nuclear power as shown by a recent symposium<sup>1</sup> and given industries such as Toshiba-Westinghouse, one of the largest employers in the Commonwealth of Pennsylvania.

**Principal Investigator:** Karen A. Thole, [kthole@psu.edu](mailto:kthole@psu.edu)  
**Co-Principal Investigator:** Arthur T. Motta, [atm2@psu.edu](mailto:atm2@psu.edu)